

result if the staff were required to identify and resolve daisy chains of mutually-exclusive applications.<sup>70/</sup> More recently, the Commission took a similar approach in crafting rules governing the licensing of individual MDS stations to BTA authorization holders. Under Section 21.938 of the Commission's Rules, a BTA authorization holder proposing a new MDS station need only demonstrate that its facility will not result in a power flux density in excess of -73 dBW/m<sup>2</sup> at the boundary of the BTA in order to meet its obligations to the holder of the neighboring BTA authorization. As the Commission itself acknowledged when it adopted Section 21.938, it is certainly possible that where MDS stations are located near to, but on opposite sides of, a common BTA boundary, they will actually interfere with one another, even though they both comply with the -73 dBW/m<sup>2</sup> power flux density benchmark.<sup>71/</sup> The Commission recognized, however, that:

a host of interference abatement techniques could be employed to prevent interference near BTA boundaries. Admittedly, this approach relies more on operator interference agreements and the honoring of another's interference rights than it does on applying rigid interference standards in the processing of applications. . . . [A]s we have indicated, given the nature and history of the service, as well as the likelihood that auction participants will be experienced in conducting negotiations, we believe that we can prevent unwanted interference by relying primarily on negotiated agreements and voluntary compliance with our interference right-of-ways, which we will enforce as necessary.<sup>72/</sup>

The same holds true here. As with MDS BTA authorizations, applicants for advanced technology facilities generally are required to maintain their emissions within a power flux density

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<sup>70/</sup> See *Gen. Docket No. 80-112 Report and Order*, 94 F.C.C.2d at 1262-65; *PR Docket No. 90-54 Report and Order*, 5 FCC Rcd at 6412.

<sup>71/</sup> See *MDS Auction Order*, 10 FCC Rcd at 9616.

<sup>72/</sup> *Id.*

at the boundary of their PSAs.<sup>73/</sup> To the extent that interference will result among simultaneously proposed facilities nonetheless, the Petitioners anticipate that the neighbor/applicants will work cooperatively in order to resolve any incompatibilities. Indeed, they are required to so under Sections 21.902(b), 21.938(a) and 74.903(c) of the Rules. To facilitate that cooperation, the Petitioners have even proposed that the initial filing window be followed by a 60-day negotiation period during which applicants can amend their proposals in order to reduce interference without fear of being precluded by a subsequent filing. Again, the Commission has previously relied upon the historical cooperation among MDS and ITFS licensees, and there is a every reason to believe such cooperation will continue where those receiving licenses under the proposed rules truly desire to provide service.

A secondary benefit of the Petitioners' proposal is that it not only works when both applicants truly desire to provide service, but also yields an appropriate result when one of the applicants is engaged in "greenmail." Although the Commission has previously taken steps to preclude the filing of applications for new MDS stations intended to "greenmail" wireless cable operators,<sup>74/</sup> it still is not unheard of for an MDS or ITFS licensee to submit an application for a facility that it has no intent of constructing, but which will result in mutual-exclusivity with a neighbor's proposal. Such "strike applications" are designed to delay the processing of the neighbor's application, positioning the filer to extract financial or other consideration from the

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<sup>73/</sup> See *NPRM*, at App. C, at C-7, C-8-9, C-27 (proposed Sections 21.905, 21.908 and 74.936).

<sup>74/</sup> See *PR Docket No. 92-80 Report and Order*, 8 FCC Rcd at 1445-48.

neighbor. The MDS rolling one-day filing window and the ITFS filing window rules were both adopted for the specific purpose of deterring such conduct.<sup>75/</sup> Because both proved effective, the Petitioners have proposed an initial window for the filing of advanced technology applications, followed by a rolling one-day filing window system. Unfortunately, these steps alone will not be entirely successful in deterring strike applications.

Because of the importance of advanced technology services to the future of wireless cable, greenmailers will be able anticipate that applications for advanced facilities will be filed during the first filing period, whether it is a single day or a longer window. Thus, greenmailers will be able to submit preemptive strike applications during the same window, resulting in mutual-exclusivity under the traditional rules. Indeed, one national ITFS licensee has already indicated that it intends to submit applications during the initial period in order to frustrate efforts by wireless cable operators to employ advanced technologies on channels licensed to other licensees in the markets where this national filer is licensed.

Adoption of the Petitioner's approach to the licensing of all facilities proposed at the same time will deter such preemptive strike applications by making it impossible for a strike applicant to delay the inauguration of service by a neighbor. Both the legitimate applicant and the strike applicant will receive authorizations under the Petitioners' proposal, allowing the legitimate applicant to move forward with the rapid introduction of service. It is for this reason that the Petitioners vehemently oppose the suggestion in Paragraph 47 of the *NPRM* that if applications

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<sup>75/</sup> See *PR Docket No. 90-54 Report and Order*, 5 FCC Rcd at 6424; *Amendment of Part 74 of the Commission's Rules With Regard to the Instructional Television Fixed Service*, 10 FCC Rcd 2907, 2909 (1995) [hereinafter cited as "*ITFS Filing Window Order*"].

propose interfering facilities are filed, the Commission “simply freeze the applications until the parties are able to resolve their differences.”<sup>76/</sup> To do so is to play directly into the hands of those strike applicants who would delay service to the public for private gain.

Admittedly, that the greenmailer also secures a license under the Petitioners’ approach will pose a risk to the legitimate operation for the duration of the greenmailer’s construction authorization, as the greenmailer could cause interference to its neighbor by actually constructing and operating a facility. However, since it is likely that in many cases the predicted interference from the greenmailer would only occur over a portion of the legitimate operator’s service area, the legitimate operator can immediately begin providing service in the area where no interference is predicted without risk to those subscribers and await the expiration of the strike applicant’s authorization before serving the area where interference is predicted. The Petitioners suspect the risk of actual interference from greenmailers to be relatively limited. History has shown that greenmailers are loathe to actually construct facilities, so the theoretical risk of interference will be limited to the duration of the construction authorization.<sup>77/</sup>

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<sup>76/</sup> *NPRM*, at ¶ 47.

<sup>77/</sup> The Petitioners believe that as a *quid pro quo* expedited licensing applicants should be ready, willing and able to construct advanced facilities upon receipt of an authorization. Therefore, in order to deter the filing of strike applications, the Petitioners believe that extensions of construction authorizations for advanced facilities should be granted most sparingly. As the Commission has previously recognized, limiting extensions of the time afforded parties to construct is one of the most effective mechanisms available for reducing strike applications. *See Gen. Dockets 90-54 and 80-113 Second Order on Reconsideration*, 10 FCC at 7081; *Amendment of Parts 21, 43, 74, 78, and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands Affecting: Private Operational-Fixed Microwave Service, Multipoint Distribution Service, Multichannel Multipoint Distribution Service, Instructional Television Fixed Service, and Cable Television Relay Service*, 11 FCC Rcd 17003, 17009 (1996).

3. *The Commission Should Restrict Amendments To Applications Eligible For Automatic Grant.*

Although the Petition provided in certain respects for the processing of amendments to advanced technology applications,<sup>78/</sup> the *NPRM* solicits comment on how the Commission's rules should be further revised to provide for the amendment of applications for booster stations and response station hubs.<sup>79/</sup> Simply put, the Petitioners believe that because the rules proposed in the Petition will result in expedited application processing, the filing of amendments during that application processing should be deterred.

There can be no doubt that the filing of amendments to pending applications is responsible in part for the backlog of ITFS applications. No matter how well-conceived ITFS applicants' plans were in October 1995 when many pending applications were filed, it is not unreasonable for needs to have changed over the 2+ years since. Thus, it is not surprising that many pending ITFS applications have been amended, some more than once.<sup>80/</sup> Yet, every amendment imposes burdens on the Commission's limited staff (which may have to re-do a substantial amount of processing that has already taken place) and on the licensees of and applicants for neighboring facilities, which must determine whether the amended application will cause impermissible harmful interference.

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<sup>78/</sup> See Petition, App. B, at 19, 29, 49-50 and 59 (proposed revisions to Sections 21.909(e), 21.913(d), 74.939(d), 74.985(d)).

<sup>79/</sup> See *NPRM*, at ¶ 56.

<sup>80/</sup> Of course, as noted *supra* at note 36, many amendments are not the result of reasonable changes in plans, but instead reflect an effort to correct applications that should not have been filed in the first place. Limiting applications eligible for automatic grants to those that are substantially complete when filed, and thereafter restricting amendments, should deter a recurrence of that behavior.

Because the rules proposed by the Petitioners will eliminate lengthy delays between the filing of applications and their grant, the balance between the benefits of amendments and the burdens they impose will change. As the Commission recognized when it adopted the current ITFS filing window system, the filing of amendments often requires a time-consuming re-analysis of the amendment's effect.<sup>81/</sup> It could prove quite burdensome on neighboring licensees if an applicant taking advantage of the expedited processing rules could amend an application while the 60-day petition to deny period is running without adverse ramifications, since the neighbor would have to review that amendment and prepare any necessary petition to deny within a very short time period. Thus, the Petitioners believe that while technical amendments<sup>82/</sup> generally should be permitted at any time, any technical amendment to a pending application eligible for automatic grant should be considered "major" and result in the application being considered "newly-filed" except as set forth below.<sup>83/</sup> Non-technical amendments to applications eligible for automatic grant should be classified under Sections 21.23 and 74.911 of the Commission's existing rules for determining whether an amendment is sufficiently serious in nature that the application should be deemed newly-filed.

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<sup>81/</sup> See *ITFS Filing Window Order*, 10 FCC Rcd 2910.

<sup>82/</sup> For purposes of this proposal, the phrase "technical amendment" refers to any change in the technical specifications of the proposed facility, to any new interference analysis or any revision to an interference analysis submitted with the application, or the submission of any interference consent from a neighboring licensee.

<sup>83/</sup> The facility proposed by an amended application should not be entitled to protection from interference by a facility proposed after the initial application (presuming, the subsequent application established protection to the facility proposed in the initial application, as would be required). In such a case, the facility proposed in the amended application must accept any interference that is caused by the subsequent proposal, and must protect the subsequently-proposed station from interference.

If an amendment to an application eligible for automatic grant results in it being considered newly-filed, the Petitioners believe the amendment must be treated essentially as a new application -- it must be served on neighbors, appear on public notice commencing another 60-day period for petitions to deny, established protection from interference to all facilities proposed prior to the amendment (even if such facilities were proposed after the initial application) and accept interference from proposals advanced on or before the amendment date.

Admittedly, this approach will require greater care on the part of applicants in the preparation of applications. However, that is appropriate. As discussed above at note 36, in exchange for the benefits of expedited processing, applicants should be required to submit applications that are substantially complete when filed and include all of the technical information required by the proposed rules. Rather than follow the current practice of encouraging large numbers of amendments that ultimately slow the processing of applications, the Commission should implement a system that rewards those who take the time to prepare complete and accurate applications.

The only exception should be the one proposed in the Petition -- under the proposed language of Sections 21.27(d) and 74.911 after the initial filing window, the Commission would announce those substantially complete applications tendered during the one-week period, and the applicants would have a 60-day opportunity to resolve conflicts and amend their proposals, so long as they complied with the interference protection rules and did not increase interference to any facility proposed during the one-week window.<sup>84/</sup> The advantage of this 60-day period is that it allows

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<sup>84/</sup> See Petition, at 36-38.

conflict resolution without the fear that while settlement discussions are underway some third party will file a new application that will then have to be protected in crafting a settlement. At the close of this 60-day amendment period, there would be a second public notice, and an opportunity for petitions to deny against all of the applications filed during the one-week filing window, as amended. Thus, the major reason for not allowing amendments to applications for automatic grant -- depriving neighbors of 60 days in which to petition to deny -- is not present with respect to amendments filed during this special opportunity.

4. *The Commission Should Employ A Rolling One-Day Filing System For ITFS Major Modifications, Just As It Does For MDS Applications.*

Although the Petition did not suggest any revisions to the Commission current window filing system for the processing of traditional ITFS applications, the Commission has “solicit[ed] comment on whether we should retain our current periodic filing window system used for ITFS applications.”<sup>85/</sup> In the Petitioners’ view, the Commission could substantially expedite the initiation of competitive wireless cable services over leased ITFS excess capacity by moving to a rolling, one-day filing window system for the processing of applications for authority to modify ITFS stations akin to that in place for MDS applications, and by adopting provisions for the expedited review and automatic grant of those applications.

When the Commission switched from using an A/B cut-off list to filing windows to control the filing and processing of ITFS applications, the Commission anticipated that the new system

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<sup>85/</sup> See *NPRM*, at ¶ 46.



would “allow us to better control the flow of applications and improve processing efficiency.”<sup>86/</sup> However, history has shown that the periodic filing window system for ITFS applications has not achieved the objective of expediting ITFS applications processing. While logic suggests that the window filing system should result in faster processing when compared with the A/B cut-off list system it replaced, ITFS applicants and their wireless cable affiliates alike have found that it still takes far too long for ITFS applications to be processed to grant.

Although this failure can be traced to many causes, by far the most significant is that the Commission simply has not been able to devote the personnel resources necessary to expeditiously process the quantity of applications being submitted under the filing window system. This, in turn, is due in large part to the fact that ITFS filing windows are opened so infrequently that the Commission’s limited resources are overwhelmed by the substantial number of applications filed when a window is opened. For example, the first ITFS filing window in October 1995 saw over one thousand applications filed, largely reflecting a pent-up demand following a lengthy freeze.<sup>87/</sup> This was far more applications for new stations and for major modifications of authorized stations than the Commission’s limited staff could process efficiently, and hundreds of those applications

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<sup>86/</sup> *ITFS Filing Window Order*, 10 FCC Rcd at 2907.

<sup>87/</sup> When the Commission first proposed the adoption of an ITFS filing window system on February 11, 1995, it imposed a freeze on the filing of applications for new ITFS stations or for major modifications to authorization facilities that lasted until October 1995, save for a brief period in mid-1995 during which major modification applications were accepted. *See Amendment of Part 74 of the Commission's Rules With Regard to the Instructional Television Fixed Service*, 8 FCC Rcd 1275, 1277 (1993)[hereinafter cited as “*ITFS Filing Window NPRM*”]; “Notice of Limited Period to File Instructional Television Fixed Service Applications For Major Changes in Existing Facilities.” *Public Notice*, Report No. 23564A (rel. Aug. 3, 1995).

remaining pending today, more than two years after the close of the window. When the Commission finally opened a second window in October 1996, it severely restricted the types of applications that could be filed in order to avoid overloading the staff once again.<sup>88/</sup> Because it has now been more than two years since the Commission has accepted applications for many types of major modifications and for new ITFS stations, it is likely that the current limited staff will again be overwhelmed by applications unless substantial changes are made to the ITFS application processing system.

Since staffing is unlikely to increase to the levels necessary to eliminate the unacceptable ITFS application processing delays, dramatic revisions to the Commission's rules to allow the limited staff to timely process the anticipated onslaught of applications are called for. The use of filing windows as a mechanism to regulate the flow of ITFS applications is itself part of the problem, for the current system tends to increase dramatically the number of applications that are filed during any given window, to cause the filing of numerous additional documents outside of filing windows that the staff must address, and to expand the number of applications that are mutually-exclusive and must be subjected to a time-consuming selection process.

The Number Of Applications Filed In Any Window Expands When Infrequent Filing Windows Are Employed. As discussed *supra* at note 66, history has shown that despite the Commission's best intentions, periodic filing windows open with far less frequency than licensees need. As a result, a "gold rush" mentality takes hold -- applicants propose to construct facilities that

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<sup>88/</sup> See "Mass Media Bureau Announces Commencement of Sixty (60) Day Period for Filing ITFS Modifications and Amendments Seeking to Co-Locate Facilities With Wireless Cable Operations," *Public Notice*, DA 960-1724 (rel. Oct. 17, 1996).

they are not yet certain they want, for fear that it will be years before another opportunity to file will arise. The result is a self-fulfilling prophecy; because of the sudden influx of applications, the Commission staff is overwhelmed, and as a direct result, it truly is a long time before the backlog is cleared and a new window can be opened. By contrast, when a rolling one-day filing window system is employed, applicants are not under the same pressure to submit applications prematurely and the total number of applications should be reduced.

Processing Delays Caused By The Flood Of Applications During Any Given Window Lead To Numerous Amendments. As discussed *supra* at page 44, infrequent filing windows and application processing delays also have tended to result in numerous amendments to applications. No matter how well-conceived an application was when it was filed, circumstances inevitably change when applications are left pending for years and amendments are necessary to address those circumstances. Moreover, as discussed *supra* at note 36, amendments are often necessary because incomplete applications are filed during windows out of fear of missing a scarce filing opportunity. Regardless of why an amendment is needed, every amendment imposes burdens on the Commission's staff and on the licensees of and applicants for neighboring facilities. Although no statistics are readily available, the Petitioners believe that far fewer MDS applications are being amended than ITFS applications, a fact the Petitioners attribute largely to the use of a rolling one-day filing window system for MDS applications.

Infrequent Filing Windows Inevitably Lead To Requests For Special Temporary Authorizations That Result In Double-Processing. One of the by-products of infrequent filing windows is that, as marketplace demand evolves, wireless cable operators frequently find that major

modifications are required to facilities, but no filing window is imminent. In such cases, licensees routinely request and receive special temporary authorizations (“STAs”) from the Commission staff. While this practice is a necessary evil under the current regulatory regime, it is extremely inefficient because it requires the staff and neighboring licensees to review the STA request when filed, and then be burdened again when an application for permanent authority to implement the modification is filed during a subsequent window. When the Commission abandoned its A/B cut-off list system for processing applications, it did so in large part because:

The cut-off procedure has become inefficient, requiring an initial processing of a substantial number of applications simply to place them on an "A" cut-off list, with little benefit. Because each application must be processed a second time for legal and technical analysis, we are confronted with time-consuming double processing, which is an inefficient use of Commission resources.<sup>89/</sup>

Ironically, the periodic filing window system still results in inefficient double-processing because of the number of STAs that must be sought.<sup>90/</sup> By contrast, because of the use of a rolling one-day filing window system for MDS major modifications, there are far fewer STA requests submitted by MDS licensees and far less double-processing of proposals.

Filing Windows Increase The Number Of Mutually-Exclusive Applications. By its very nature, an infrequent periodic filing window system will tend to increase the number of mutually-

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<sup>89/</sup> *ITFS Filing Window NPRM*, 8 FCC Rcd at 1276.

<sup>90/</sup> It is worth noting that because so many licensees must secure STAs, the filing window system does not serve one of its primary objectives – stopping strike applications by cutting-off applications as they are filed. *See id.* at 1276; *Gen. Dockets No. 90-54 and 80-113 Report and Order*, 5 FCC Rcd at 6424. Because a STA request necessarily “telegraphs” a licensee’s plans for filing during the next window, it becomes much easier for a disingenuous application to propose a competing application during that window.

exclusive applications the Commission must contend with as compared with a rolling, one-day filing window system. Indeed, the Petitioners are unaware of any mutually-exclusive applications submitted since the Commission commenced using the rolling one-day filing window system for MDS (save for those cases under the lottery system where application mills intentionally submitted mutually-exclusive applications on the same day in order to increase their ability to sell identical applications to multiple victims). As a result, there are situations where the MDS channels have been licensed in the configuration desired by the wireless cable operator, but the ITFS channels are awaiting resolution of mutually-exclusive cases that would not have arisen had a rolling one-day filing window been in effect. In the past the Commission has strived to make certain that no potential ITFS applicant is cut-off from applying for new facilities without having had a fair opportunity to apply for available spectrum. Given that the ITFS spectrum has been available now for more than three decades and has largely been licensed in all but a few areas, that concern should no longer be paramount. To the contrary, particularly since applicants to modify ITFS facilities must demonstrate that they will maintain their power flux density within certain bounds 35 miles from the transmit site, modification applications cannot have have a significant preclusive effect on licensing of new stations anymore.<sup>91/</sup>

5. *To Avoid Delays In The Processing Of ITFS Applications In The Future, The Commission Should Adopt Rules That Permit Expedited Processing of Major Modification Applications.*

Because the marketplace demands that wireless cable operators have the flexibility to rapidly respond to demands for new service, the wireless cable industry can no longer suffer delays in the

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<sup>91/</sup> See *MDS Auction Reconsideration Order*, 10 FCC Rcd at 13828.

processing of ITFS major modification applications of the sort that have plagued the industry for years. A move towards a rolling, one-day filing window system for ITFS applications will certainly help. However, that change alone will not have the desired effect unless other changes to the way the Commission processes ITFS applications are also implemented.

The Petitioners anticipate that once the Commission again allows the filing of ITFS major modification applications, a sufficiently large number of such applications will be filed that there is a substantial risk of again overwhelming the processing staff unless changes are made to the way in which applications are processed. The problem is essentially the same as discussed above with respect to applications for advanced technology facilities — the staff simply is not large enough to timely review all of the applications, verify the accuracy of the accompanying interference analyses, determine which applicants are mutually-exclusive with other applicants, and determine which of the mutually-exclusive applications should be granted. Thus, the Petitioners believe the Commission should not only move to a rolling one-day filing window for major ITFS modification applications, but should couple that change with rules similar to those proposed for expediting the processing of advanced technology applications. Specifically, provided that they do not propose a power flux density in excess of -73 dBw/m<sup>2</sup> at the boundary of their PSAs, future modification applications should be automatically granted if they are not the subject of a petition to deny within 60 days of appearing on public notice, and they should be entitled to grant regardless of whether they cause interference to or suffer interference from any other application filed on the same day (or during the initial filing window).

As with applications for advanced technology systems, this proposal effectively affords ITFS stations a geographic service area and the flexibility to modify their facilities within that area with far less regulatory delay than under current approaches. This proposal is a logical outgrowth of the Commission's prior determination that ITFS facilities proposed prior to September 15, 1995 are restricted from exceeding a power flux density in excess of -73 dBw/m<sup>2</sup> at the boundary of their PSAs.<sup>92/</sup> It recognizes that so long as the power flux density remains within limits, the potential for cochannel interference is minimized and therefore modifications can be processed employing an expedited system. Yet, it must be emphasized that all incumbents remain entitled to 45 dB/0 dB D/U interference protection and that any facility that is constructed as a result of an automatic grant will be required to cure impermissible harmful interference that results from the facility.

To implement the proposed system, the Petitioners suggest that the Commission devote its ITFS application processing resources during the pendency of this proceeding to clearing the backlog of pending applications to the greatest extent necessary. While the Petitioners appreciate that the Commission has chosen not to grant any mutually-exclusive applications for new ITFS stations pending resolution of the issues raised in MM Docket No. 97-234, the staff can in the interim clear away large numbers of other pending applications that would otherwise have to be protected in the design of advanced technology systems. Once final rules are adopted in this docket, the Commission should then schedule an initial one-week filing period similar to that discussed in the Petition, but instead of limiting it to just the filing of advanced technology applications also permit ITFS major

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<sup>92/</sup> See *MDS Auction MO&O on Reconsideration*, 10 FCC Rcd at 13828-29.

modification applications.<sup>93/</sup> Once that window closes, the Commission should proceed with a review for completeness, issue a public notice commencing a 60-day period for resolution of conflicting applications and then, issue a subsequent notice starting a 60-day period for petitions to deny. Any application that is not subject to a petition to deny or notice from the staff that it will not be automatically granted should then be deemed granted as of the 61<sup>st</sup> day after the commencement of the petition to deny period. The Commission can then open a window for the submission of applications for new ITFS stations (assuming that by such time the issues in MM Docket No. 97-234 have been resolved).

**B. The Commission Should Limit Unlicensed Response Stations To 2 Watts Transmitter Output Power And 33 dBW EIRP Per 6 MHz Channel.**

Under the rules proposed in the Petition, no limits were placed on the power of response stations authorized to operate without a specific license. The *NPRM*, however, proposes to limit to 18 dBW EIRP the power of response station transmitters permitted under a blanket license, while allowing higher power facilities to be separately authorized on a site-specific basis.<sup>94/</sup> Although the Petitioners do not oppose the Commission's proposal to limit the power of response stations that can

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<sup>93/</sup> As noted *infra* at page 112, that window should be timed so that any proponent of a Commission-coordinated channel retuning will have an opportunity to provide the affected ITFS licensee with the requisite notice and will be able to submit any resulting application during the initial filing window.

<sup>94/</sup> See *NPRM*, at ¶ 42. The *NPRM* indicates that this EIRP limit would only apply to "response station transmitters in cellularized systems." *Id.* However, it makes little sense to restrict the power of response stations and cellularized systems, and not similarly restrict response stations that communicate with a single response station hub within the market. Therefore, the Petitions suggest that whatever power limit is imposed on response stations authorized under blanket licensing, be applied to all such response stations.



be installed under a blanket license, the proposed 18 dBW EIRP limit is far too low to permit wireless cable to be a commercially viable service. As a practical matter, the power limitation contained within the rules will be the maximum power at which transceivers operate – potential subscribers who can only be effectively served with a greater EIRP simply will not accept a delay in service commencement of several months while the operator secures an individual license from the Commission. Therefore, the Petitioners propose that the Commission permit response stations to be installed under a blanket license that are limited to 2 watts transmitter output power and 33 dBW EIRP.

In retrospect, the Petitioners agree that, although their proposal was designed to provide maximum flexibility, there could be significant benefits to limiting the power at which response stations can operate. Just as the Commission has previously found that “[s]etting maximum power limits on WCS operations will provide MDS/ITFS equipment manufacturers and service providers with the necessary certainty regarding the potential WCS environment to enable them to design and purchase more robust receiving installations, including better designed downconverters,”<sup>95/</sup> establishing a maximum power for response stations will provide additional certainty that will allow the design and installation of superior receiving installations that are less prone to interference.

However, the 18 dBW EIRP limitation proposed in the *NPRM* is overly restrictive. Attachment B hereto is “Power Limitations for Response Station Transmitters: An Analysis,” S. Merrill Weiss has prepared to analyze the ramification of the proposed 18 dBW EIRP limitation.

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<sup>95/</sup> See *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service*, 12 FCC Rcd 3977, 3983-84 (1997) [hereinafter cited as “*WCS Reconsideration Order*”].

As Mr. Weiss concludes, adoption of the proposed limitation would impose “rather significant constraints on system performance.”<sup>96/</sup> If wireless cable is to succeed in the marketplace, it cannot accept the significant degradations in service area, service availability and/or throughput that will be required if the Commission’s proposed power limitation is adopted.

Mr. Weiss concludes that limiting power to 2 watts transmitter output power and 33 dBW EIRP “would permit maximum EIRP levels to reach a more realistic value for the types of applications contemplated for the proposed new service without placing the processing constraints on the service that have the potential to kill its commercial viability.”<sup>97/</sup> The interference protection regime that the Petitioners are proposing will effectively assure that even at this higher power level, interference will not result from the operation of response stations. Therefore, the Petitioners strongly urge the Commission to limit the power of response stations that can operate under a blanket license to 2 watts transmitter output power and 33 dBW EIRP.

**C. Although Some Changes To The Proposed Methodology For Predicting Interference May Be Appropriate, Complexity Is Inherent In Any Approach That Seeks To Assure Interference Protection While Maximizing Flexibility.**

Reflecting the complexity of the interference analyses required under the rules proposed by the Petitioners, the *NPRM* has appropriately solicited comment on whether “there are less complex solutions or partial solutions for analyzing cellular and/or two-way systems” for potential

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<sup>96/</sup> Weiss, “Power Limitations for Response Station Transmitters: An Analysis,” Attachment B, at A7 (Jan. 6, 1997).

<sup>97/</sup> *Id.*, at A8.

interference.<sup>98/</sup> Indeed, when the drafters of the Petition commenced this project, it was hoped that a relatively simple approach could be employed. However, it soon became apparent that more simplistic approaches would either over-protect incumbent facilities (and thereby unnecessarily preclude the deployment of advanced technologies) or under-protect incumbent facilities (and unreasonably risk interference to existing operations). The complexity of the Petitioners' approach is an unavoidable consequence of their objectives — providing maximum flexibility without causing interference.

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<sup>98/</sup> See *NPRM*, at ¶ 44. Although the Commission has ultimately proposed to employ the methodology developed by the Petitioners, the Petitioners are concerned that the Commission may not fully appreciate the objection and results of the testing conducted in Tucson, AZ prior to the filing of the Petition. Paragraph 39 of the *NPRM* suggests that the use of Tucson for the testing may have led to flawed results because the Tucson area is relatively flat, lacks tall structures and is relatively devoid of foliage. Ironically, it is for precisely these reasons the Tucson was chosen as the test site. The testing in Tucson was not meant to represent a "typical" propagation model of a two-way system, but rather was meant to be a "worst case" example. Recall that the purpose of the testing was to validate the methodology developed by the Petitioners for predicting the accumulated power of multiple response stations operating on different subchannels at a given location. See Petition, App. C, at 35-36. Because the Tucson area presents a propagation environment relatively free of terrain obstruction and foliage attenuation, it was ideal for this testing since the absence of obstructions maximizes received signal level. Since the interference methodology proposed by the Petitioners proved to be conservative in predicting the received signal levels in Tucson, the methodology will prove even more conservative in the prediction of received signal levels for other areas of the country where obstructions will attenuate propagation from response stations.

Similarly, the fact that the Tucson testing employed narrowband transmitters operating on a separate subchannel for each response station does not render the test results suspect. Admittedly, in an operational system numerous response stations will be sharing spectrum. The Tucson test employed just one response transmitter per subchannel to allow ease of identification of each signal outside of the cell, not to accurately represent what bandwidth or modulation technique may or may not be used in a typical two-way application. Although use of separate, narrowband transmitters for the test may not be indicative of an actual two-way application, it was critical to studying the accumulated characteristics of return path signals.

The problems inherent in developing an interference-protection system that is neither over-protective nor under-protective is illustrated by examining alternatives that have been put forth in this proceeding. For example, as the Petitioners previously demonstrated, a proposal to employ just power spectral density limits and emission masks to control interference, while attractive in its simplicity, is so under-protective it would wreck havoc on existing MDS and ITFS licensees.<sup>99/</sup> Because interference occurs when the undesired signal is strong relative to the desired signal, and power spectral density limits and emission masks only address the absolute level of energy, adoption of such a proposal would not assure protection to MDS or ITFS receive sites sufficiently close to response transmitters that they would receive unduly high levels of undesired signal.

In contrast, the suggestion advanced in the *NPRM* that determinations of noninterference be based solely on terrain shielding would have the reverse effect -- it would preclude the deployment of advanced technologies that could be implemented without causing actual interference. Simply stated, response transmitters do not have to be terrain shadowed from an adjacent market in order to provide adequate interference protection.<sup>100/</sup> Response transmitters can reduce power, utilize more directional transmitting antennas, cross-polarize or use combinations of these tools to protect neighboring stations without the use of terrain shielding. It simply is not necessary to artificially

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<sup>99/</sup> See Petitioners' Reply Comments, at 41-42.

<sup>100/</sup> Although not stated in the *NPRM*, the Petitioners presume that the Commission is only contemplating the use of terrain shielding as a device for limiting co-channel interference. Because all of the MDS and ITFS channels tend to be licensed in each market, an absolute requirement for terrain shielding would effectively preclude the initiation of two-way services in the 2.5 GHz band because there generally will be an adjacent channel facility in the same market that cannot be terrain shielded.

limit the height of response transmitters to that which eliminates line-of-sight conditions to a neighboring station. To do so would artificially prevent the provision of commercial and educational two-way services under circumstances where the response transmitters would not cause actual interference.

The proposal advanced by EDX Engineering, Inc. ("EDX"), a software vendor, in its early-filed comments on the *NPRM*, which intended to simplify the interference analysis process, is clearly flawed.<sup>101/</sup> Although the Petitioner intend to more fully address the EDX proposal in their reply comments, it is already patently clear that the EDX approach suffers the flaws that the Petitioners suspect will infect any attempt at significant simplification.

For example, by representing all of the response transmitters distributed throughout a service area at a single point, EDX would deprive applicants for advanced technology facilities of their ability to use terrain shielding as a protection tool. That could have a catastrophic impact, for in situations where response transmitters will be operating cochannel and plane polarized with an adjacent market, terrain shielding may be the only hope of providing the 45 dB interference protection necessary.

In situations where a response service area ("RSA") boundary is very close to the protected service area boundary or to an ITFS receive site in an adjacent market, the level of interference to this area or site can be very much dependent on the response station antenna pattern, which dictates the level of any back side radiation from the response stations in close proximity to the boundary areas. By representing all of the power radiated by the universe of response stations at a point source

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<sup>101/</sup> See Comments of EDX Engineering, Inc., MM Docket No. 97-217 (filed Dec. 9, 1997).

possible miles away at the hub center, you will not obtain an accurate indication of the interference to receive sites located very near the RSA boundary. The analysis EDX performed in its comments looked at receive power levels from the cell at a “analysis line” located a constant 50 km away from the hub center in all directions. EDX used various size cells (1.0 km to 20 km in radius) but always analyzed the aggregated power at the 50 km point. If this point were moved closer, the variations in power EDX illustrates in Table 1 would get much larger.

EDX does not address the issue of non-circular cells and how its proposed formula for determining permissible power levels and heights would have to be adjusted to accommodate such cells. The ability to license non-circular cells is essential, especially because licensees may have to carefully craft response service areas in order to avoid interference to neighbors. If only circular response service areas are permitted, the net result is that two-way services may be precluded where the Commission’s interference protection rules cannot be satisfied if a circular service area is proposed.

Nor does the formula EDX is proposing for calculating the power at the point source account for use of various grades of transmit antenna patterns that will be employed for response stations. The interference potential of radiation from a series of 12 dBi response station antennas is certainly be different than from a series of 24 dBi antennas. The Petitioners’ approach allows the applicant to carefully tailor its proposal (through the designation of different classes of response station) to develop the most efficient mix of different kinds of response stations, while assuring compliance with its interference protection obligations. This maximizes service to the public – a benefit that would be lost under the EDX approach.

Finally, although EDX advocates the use of PCS calculation methods as the basis for its proposal, EDX fails to address that PCS employs omnidirectional transmit antennas, rather than the very directional antennas MDS response stations will employ. As is discussed throughout the Petition and these Comments, the use of directional antennas is critical in the mitigation of interference and must be maintained as an interference abatement tool.

1. *The Commission Should Permit Terrain Shielding And The Noise Floor To Be Employed When Appropriate In Order To Simplify Interference Analyses.*

While, for the reasons set forth above, the Petitioners do not propose that terrain shielding alone be relied upon for interference protection, that does not mean that terrain shielding has no role to play in the licensing of advanced technologies. At present, terrain shielding is considered when demonstrating that a downstream facility will protect existing or previously-proposed downstream receive sites. This same approach should be applied when considering the potential for interference from upstream response transmitters. If a receive site is terrain blocked from a proposed response transmitter or class of response transmitters, the receive site should be considered to be protected.<sup>102/</sup>

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<sup>102/</sup> Recall that the interference methodology proposed by the Petitioners requires the creation of a series of grid points in a response service area or response service area region. *See* Proposed Text of Attachment to Report and Order Setting Forth Method For Predicting Accumulated Signal Power From a Multiplicity of Statistically-Located Transmitters, *NPRM*, at App. D, at 1-3; Rationale for Two-Way & Distributed Transmission Operations of Wireless Cable Systems, *Petition*, App. D, at 26-34. Regional classes of response transmitters are created and the power radiated from each regional class is then distributed to each analysis grid point as is appropriate. Each regional class has a defined height for the response transmitters. If an analysis grid point for a particular class of response stations is terrain blocked to the receive site or area of receive sites of an adjacent or cochannel station, the receive site or area of receive sites should be considered protected from response stations represented by this grid point. This grid point would then be eliminated from the interference analysis for this particular class of stations. If other classes of response stations are assigned to this grid point with increased height and are not terrain blocked, this grid point would be included in the analysis for those classes of stations. Terrain shadowing would be determined by

When interference analyses are conducted in support of an advanced technology application, a propagation model allowing the insertion of excess path loss into the interference prediction should be utilized. When a propagation model is used in an area study of interference from one station to another, the propagation model and excess path loss should be applied both to the undesired and desired station. In areas where the desired signal has significant excess path loss due to terrain blockage between the receiver and the desired transmitter, it can be impossible to provide the 45 dB protection required. Along similar lines, affording 45 dB protection is overly protective when the level of the desired signal is approaching the noise floor of the receiving system and the level of the undesired signal does not significantly contribute to the noise level of the receiving system.<sup>103/</sup>

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using the specified height of the regional class above ground level and the height of the terrain above mean sea level at the grid point. For example, suppose two classes of response stations existed in a response service area which contained 10 grid points. One class of stations has an antenna height of 50 feet above ground and the other 100 feet. Suppose a terrain shadowing study is performed from each of the 10 grid points to a 35 mile protected service area of an adjacent market cochannel station for both of the classes of stations. When 50 foot antenna heights are utilized, all of the grid points are terrain blocked. However, when 100 foot antenna heights are utilized 4 of the 10 grid points have unobstructed electrical paths. In calculating interference from the grid points, none of the 50 foot response transmitters would be utilized and only the portion of the 100 foot response transmitters assigned to the 4 grid points with unobstructed electrical path would be utilized in the calculation of interference. Likewise, if terrain blockage from any requested site specific authorizations can be shown these sites would also be eliminated from the interference analysis to an adjacent or cochannel station. However, where TDMA or similar protocol is used, it may be possible to analyze only a worst case grid point.

<sup>103/</sup> The noise floor should be calculated from the following equation and will use an appropriate bandwidth for the channels being protected:

$$P_{\text{noise}} \text{ (dBW)} = 10\log[k\{^5/_9(T-32)+273\}BW]$$

where

k = Boltzmann's constant,  $1.380662 \times 10^{-23}$  ,  
T = Noise temperature in degrees Fahrenheit,  
BW = Bandwidth in Hz.



Therefore, the Petitioners propose that conducting an interference study for areas where the desired signal level falls below the appropriate noise floor, no calculations of compliance with the 45 dB benchmark should be required.

2. *All Interference Analyses Should Consider The Cumulative Impact Of All Simultaneously-Operating Facilities Licensed To Or Proposed By The Applicant To Establish The Undesired Signal Level.*

The Commission has properly noted in the *NPRM* that in instances where a primary station, booster stations and/or response stations “share, partially or completely, common spectrum, then the calculations for compliance with the interference standards must come from an aggregation of the power of all three types of stations.”<sup>104/</sup> Thus, the Petitioners agree that whenever an applicant is required to conduct an interference analysis, the undesired signal level must be determined by accumulating the combined signal levels of all primary stations, booster stations and/or simultaneously-operating response stations licensed to or proposed by that applicant. In fairness to incumbent licensees, this approach should be used whether the undesired station is co-channel or adjacent channel to the station being analyzed for protection, and should apply whether the interference protection benchmark is measured as a power flux density (as in the case of protection to BTA authorization holders) or as a D/U ratio (as in the case of incumbent MDS and ITFS stations).

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If the desired signal is analog, a 4 MHz bandwidth would be utilized. If the desired signal is digital, the appropriate bandwidth for the proposed transmitted channel would be utilized.

<sup>104/</sup> *NPRM*, at ¶ 41.